# The Air Line Pilot

May, 1954

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# *We're Not Nosey, But—*

# *Did You . . .*

Send in your Group Life Application? More than 2,500 pilots did and enrolled in ALPA's group life plan—tailored for airline pilots—in less than one week after applications were mailed.

# *If You Didn't . . .*

Do you still want to take advantage of it? Enrollment is still in progress and will continue until July 31, 1954.

# *Are You . . .*

Wondering about costs? Look at it this way: A pack of cigarettes costs about 25c a day, ALPA Group Life Insurance only about 20c a day for full $10,000 coverage.

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# ALPA GROUP LIFE PLAN

**55th St. and Cicero Ave.** **Chicago, Illinois**

# 90 Years of Cockpit Experience

## A Reporter's Summation of the Overall Theme, Scope and Highlights of the Annual ALPA Air Safety Forum, and What It Meant to Air Safety.

By Ed Modes

Take the operational viewpoint you're bound to get from a group of men who have logged almost 800,000 flying hours, apply them to air safety problems of the present and discernible future, and you have the formula that spelled success for ALPA's Second Annual Air Safety Forum.

By actual count, a total of 788,000 hours, give or take a few, was represented by those in attendance at the Second Annual Air Safety Forum held at Chicago's Sheraton Hotel April 21, 22, and 23.

Capt. R. A. Stone (UAL), who served as master of ceremonies for the three-day session, stressed the extent of line pilots' participation in air safety work.

It is paying off, he said, in awakening a feeling of responsibility in the pilot that he is a safety expert.

President Sayen welcomed the well over 100 pilot, industry, and government officials with a caution that air safety cannot rest on its laurels.

"Many people consider air safety at an acceptable level," he said, "but we're in a potentially hazardous business that requires constant vigilance.

Vol. 23 No. 5

**The Air Line Pilot**

May, 1954

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Published Monthly by The Air Line Pilots Association, International, Affiliated with A. F. of L. Publication offices: 55th Street and Cicero Avenue, Chicago 38, Illinois.

Advertising appearing in this magazine cannot be construed as being an endorsement by The Air Line Pilots Association or the Air Line Pilots.

Annual Subscription, $2.50

Ed Modes, Editor

Planning must continually be years and years ahead of industry."

Good air safety, he said, is sound economics: "Economics in aviation is dictated by public confidence—a very elusive thing."

"Accidents are obviously expensive," he declared, "some estimates placing the cost to the industry, both directly and indirectly, at $5,000,000 per accident."

He praised ALPA's air safety chairmen: "They work without compensation; they do a terrific job."

### Cockpit Viewpoint Vital

Finally, he keynoted the job before the Forum, stressing the importance of the operational viewpoint: "The pilot is the last man to put the stamp of approval on a flight. Passengers still reassure themselves with the thought—'Of course everything is all right—the pilot wouldn't go if it wasn't.' This characterizes the responsibility the pilot assumes, and explains the reason, among others, for the Forum."

Panel by panel for three days, then, the Forum explored various prominent fields of Air Safety.

Cockpit procedures, it was brought out, are increasingly important as the speed, range, and complexity of aircraft increases.

Capt. Larry Shapiro (UAL), Chairman of the Cockpit Procedures panel, told the Forum: "A flight where good cockpit procedures exist, also means greater human efficiency and a greater margin of safety." He urged, as a goal, "to have the best procedures to produce the maximum human efficiency in every cockpit."

L. I. O'Kelly, of the University of Illinois, delved into the question, "How Much Can a Pilot Do?" His conclusion: Like any human, one thing at a time.

Major Norman T. Lawrence, U. S. Air Force, said that cockpit procedures are a safeguard against "design-deficiency induced pilot error." He says the Air Force believes in standardization and supports efforts to eliminate, by good design, those features that create or induce pilot error.

"The air collision problem is becoming more serious each day," Carl Christenson, UAL Director of Safety, said, "and for the first time in many years, considerable effort is being directed to its solution."

They're longer range in nature though. In reducing exposure to air collisions, the reliance is on cockpit procedures, organization and discipline with the "see-and-be-seen" principle playing a major role.

THE AIRBORNE RADAR PANEL: Industry's Sold on it, So Are Pilots. With it, Pilots Could Do Many Things They Couldn't Before.

REGIONAL AIR SAFETY ACTIVITIES: Current Program is Working Fine. The New Question: "Where do we go from Here?"

THE JET OPERATIONS PANEL: The Jet Age Will Bring New Problems; Very Probably Some Revisions of Operational Thinking.

On the other hand, the Air Traffic Control Panel thought that the "see and be seen" principle was rapidly reaching obsolescence.

"With the greatly increased numbers of aircraft now in use and the increased speeds of the newer high-performance aircraft—air line as well as military jets—the see-and-be-seen principle of VFR flight is rapidly becoming inadequate," said Capt. W. A. Jensen (AA), Chairman of the Air Traffic Control Panel.

He cited Comet experience as an example: After a year of operation and in spite of the fact accurate positon and altitude information are exchanged between passing Comets, no Comet pilot has ever seen another passing Comet in the daytime outside of terminal areas.

### ATC Problems

Existing air traffic control problems, he said, include lack of flexibility, inability to get requested routes and altitudes, inadequacy to cope with certain military operations, and the jet and helicopter problems.

Borderline weather conditions bring more tower operations than any other, Fred Glaes, Assistant Chief Controller, CAA, said. He said equipment was a problem, too — radar, for instance, which oftentimes becomes so cluttered with precipitation interference it is useless at the time it could be used the most.

Wayne Hendershot, Chief, Traffic Procedures Div., CAA, listed main problems facing the center Controller as:

Inadequate methods and equipment for transfer of data between controllers.

Inadequate presentation of flight and control data to controllers.

Delay in communication between controller and pilot.

Failure or inability of pilots to adhere to provisions of their flight plans.

Incompatibility of the L/MF and VHF airway systems.

### Airborne Radar

The Airborne Radar panel indicated that pilot and management are pretty much together on the need for airborne radar. The only thing blocking their unanimity is the natural and logical questions of industry: Where does the money come from?

Capt. George W. Henderson (UAL); chairman of the airborne radar panel, said, with radar pilots could do these things which they couldn't do before: (1) detect storm areas; (2) choose corridors of mild activity; (3) select best flight paths for takeoff or landing;

*(Continued on Page 10)*

**THE AIR TRAFFIC CONTROL PANEL: Lack of Flexibility and Adequate Equipment are Two of ATC's Greatest Problems Today.**

**FIRE FIGHTING PROCEDURES PANEL: On the Ground, Airport Equipment is Below Par; In the Air, Detectors Remain Unreliable.**

**COCKPIT PROCEDURES PANEL: In "Pilot Error," is it Really the Pilot or Unreasonable Cockpit Demands That Are at Fault?**

# Report: ALPA Regional Offices

## ALPA's First Regional Office Has Operated Long Enough to Prove Its Value. Here's a Report from the West Coast.

By Howard Jones
*Staff Representative, West Coast*

The Air Line Pilots Association now has three Regional Offices—a west coast office in Los Angeles, the east coast office in New York, and a Miami area office in Miami. In addition, an office is maintained and staffed in Washington.

Regional offices are comparatively new in the Home Office departmental structure. The west coast office was established in April, 1953, the east coast office in January, 1954. The Miami area office has been physically established, as far as location and space are concerned, and is presently being utilized but has yet to be staffed.

### Really Branch Offices

To clarify what these regional offices really are and really do, it is probably better to think of them as the west coast branch of the Home Office or the east coast branch, or the Miami area branch, rather than regional in the all-encompassing sense of the word. They are, in fact, an extension of the Home Office setup and adapted to increase the efficiency of Home Office service to a particular geographic region. In function, scope, policy, jurisdiction and responsibility, they are identical with any other segment of the Home Office and subject to the same over-all authority.

### Part of Established Structure

They can thus be interpreted not as an addition to the overall ALPA structure, but as an integral part of the Home Office whose place in ALPA's organizational pattern is already well-established. Pilots dealing with or through the regional offices, it follows, are dealing with the Home Office as they always have—only in a more efficient and time-saving manner.

This identity of the Regional Offices as part of the Home Office becomes even more evident when the pattern of services and functions of the regional offices are analyzed more fully.

### Functions

Within their respective regions, the regional offices do this:

- Negotiate and administer employment agreements to the same extent and the same manner as does a negotiator directly from the Home Office.
- Screen grievances involving application or interpretation of employment agreements as is incumbent on any ALPA negotiator whether assigned to the Home Office or one of the Home Office outposts.
- Coordinate pilot activities within a region along lines parallel to the Home Office Council Dept.
- Provides office space and services for the Association's officers and Regional Vice-President when in the area just as the Home Office provides office space. The relationship and authority of the officers and regional vice-presidents is essentially the same in relation to the Regional Offices as over the Home Office proper.
- Makes secretarial and clerical services and meeting space available to officers and pilot representatives in the region as the Home Office makes space and services available in the Chicago area.

These in themselves, of course, are not goals but methods by which the overall goal of the regional office is reached. This overall goal can be concisely delineated: to provide more efficient on-the-spot representation to geographically remote pilots; or put another way, to bring the Home Office as close to the pilots in the western, eastern, and Miami areas as it is to the pilots in the midwest.

NEWEST REGIONAL OFFICE: ALPA's East Coast Office Went Into Operation in January. Pictured is a Meeting of Staff and Pilots There.

### Negotiations Speeded Up

Based on a review of a year's operating experience of the West Coast Office, several major benefits as well as a dividend in the form of accrued by-products are prominently discernible.

For one important thing, agreements are negotiated more expeditiously. It is possible to do this largely because the delay-causing elements of time and distance are largely eliminated by having a Home Office staff member permanently in the area.

For example, 19 agreements have been negotiated on the west coast during the past 12 months. These negotiations required 26 separate series of conferences. Had there not been a branch of the Home Office in Los Angeles, it would have been necessary to make 26 trips from Chicago to Los Angeles, Seattle, Las Vegas or Denver.

Another important aspect of regional offices is their role in preventing the development of problems. Because of the immediacy of a Home Office representative, many potentially large problems are nipped in the bud while they are still small and before they begin snowballing into major projects.

Not to be overlooked are those smaller problems which can receive detailed and personal attention of a Home Office representative who is on the scene at all times. Previously, many of these, because of the involvement of obviously prohibitive factors, received only cursory attention, if any.

### Long-Range Economy

It is also a safe and logical assumption that regional branches of the Home Office are economically feasible. They are not an economic burden. They are, in fact, a long range economy and the most economically sound method of bringing the Home Office and its services to a widespread pilot population domiciled from coast to coast and border to border.

## LOCATION OF ALPA REGIONAL OFFICES

**West Coast:**
*6216 W. Manchester Blvd.*
*Los Angeles 45, Calif.*

**East Coast:**
*60 E. 42nd Street*
*New York 5, New York*

**Miami Area:**
*2012 Ponce de Leon Blvd.*
*Coral Gables, Florida*

**Washington:**
*859-861 National Press Bldg.*
*Washington 4, D. C.*

**ALPA's FIRST REGIONAL OFFICE: The Author of This Article Meets With West Coast Pilots in ALPA's West Coast Office.**

Savings, both in cash outlay and staff manpower conservation, if not phenomenal, have at least been substantial and worth noting.

For instance, transportation costs involved in the 19 agreements negotiated on the west coast last year would have amounted to over $6,000 for a Home Office negotiator operating from Chicago. With the Home Office representative operating from a Los Angeles base, transportation cost was only $749 —a transportation savings of over $5,000.

As a matter of record, the cost of maintaining the ALPA West Coast Office in 1953 was $300 less than maintaining a Los Angeles Council office in 1952.

Nor can the savings, timewise, be entirely overlooked in obtaining a picture of the regional office. Many items which previously required days to handle can now be handled often in a matter of hours; not infrequently in the few minutes it takes to make a local phone call.

### Conclusions

The regional office experiment has, to date, proven to be a sound extension of ALPA's organizational structure. They have gone a long way toward accomplishing their prime purpose—bringing the same degree of prompt representation to all pilot groups regardless of location. Probably it is also significant that while decentralization of services has been accomplished, procedures for close coordination with the Home Office have been established. This is attributed largely to the Regional Offices' non-autonomous status as part of the Home Office, not a separate entity, and therefore under central and channelled authority.

As time goes on and more experience is gained, additional means of providing pilots more Home Office services through these regional branches seems a certainty. Right now, we can safely conclude this: as branches of the Home Office, regional offices are proving themselves practical and justifiable. The fact exists that more services are more readily within the reach of more pilots at less cost to the Association than before.

The realization that the Home Office has actually extended to the local level, where its services are available and readily accessible to anyone requiring them, should be a comforting fact to all pilots. These offices, their facilities and staffs, are there for the benefit of ALPA members. You are urged to utilize them.

# The Pilots and the CAA

## Text of Speech of the Civil Aeronautics Administrator Delivered at the Second Annual ALPA Air Safety Forum.

By F. B. Lee
*CAA Administrator*

The Air Line Pilots Association deserves the thanks of all commercial aviation for instituting these annual forums, with three days of discussion of airline safety problems. The Forum is only one of many areas where the ALPA is making direct and very substantial contributions to the safe transportation of our people and goods by air.

Air Safety is, of course, a mutual bond between the Civil Aeronautics Administration and the ALPA. Almost the sole justification for the existence of the CAA is to secure the maximum possible safety in air transportation.

Only a handful of our employees are safety agents who keep an eye on manufacturing, certificate pilots, and watch day-to-day flying operations. But the rest play equally valuable roles in promoting safety. The largest group in CAA operates the Federal airways with which you are so familiar, and provides traffic control and approach assistance at the major airports. Other offices in the CAA plan better and safer airports, test new navigational equipment, and work with the many parties concerned in such problem areas as high television and radio towers.

All of us in government aviation, therefore, have been pleased by the safety work of ALPA, which parallels our own efforts. Formation of the CAA-ALPA Operations Committee this year is symbolic of our mutual concern with safety.

Even more gratifying to me has been the day-to-day cooperation between our safety agents and local pilot groups. There have been many instances, for example, where ALPA councils have invited CAA agents to attend their meetings and participate in discussing local safety problems.

Cooperation of this kind between all segments of industry and government is the key to aviation safety. A multitude of persons are involved in the flight of a modern airliner. Each must perform his part with skill and precision. The pilot, for safe flight, must have assistance from the mechanics who keep the aircraft in airworthy condition, the dispatchers, the meteorologists, and the air traffic controllers.

Less directly, but part of the air safety picture, are the men who design and manufacture transport aircraft, the CAA employees who test, service and install the airway and landing aids, and the airline executives who emphasize safety above other considerations.

But the pilot, after all, plays the principal operational role in airline safety. I've heard it said that the most significant factor in a safe flight is how well the pilot's wife cooked his breakfast eggs. If this is true, you must have married excellent cooks, because the safety record of our scheduled airlines is one of steady improvement.

Actually, the aviation industry in general has grown up to a point where it realizes that safety is the keystone of good business. For that reason, we are working toward giving industry greater responsibility to develop safe operations, and to maintain the highest level of safety.

Under this concept, the CAA would accept a declaration by responsible airline operators and aircraft manufacturers that their operations and products meet the required standards. This would be confirmed by CAA spot checks from time to time, but we would avoid detailed examination and regulation of companies with high safety standards.

Instead, we would concentrate most of our efforts on areas where we have reason to believe lower safety standards exist. Such a flexible approach, we believe, will give maximum safety results with a minimum expense to the taxpayer.

This year, for example, we are placing special emphasis on the irregular air carriers. The safety record among the irregulars last year was quite disappointing, and we are taking a number of steps to bring improvement.

In cooperation with irregular airlines, we opened a C-46 school at Oklahoma City to teach the best operating practices to chief pilots of the non-scheduled lines. The school's operations were similar to the DC-4 training given at Brownsville several years ago in cooperation with the airlines and ALPA.

One of the pilots who completed the Oklahoma City training lost a propeller recently during take-off at El Paso. He brought the C-46 to a safe landing, and told an investigator, "all I can say is I'm glad this happened after I took the course—not before."

Our CAA engineering personnel are working with two different groups in efforts to bring C-46 performance up to standards satisfactory to the Civil Aeronautics Board. In addition, through new parts 40, 41 and 42 of the Civil Air Regulations, we are cooperating with the Board in requiring safety standards in the irregular field —which are equivalent—so far as possible—to those affecting scheduled carriers.

We have tightened our inspection procedures in the field of irregular and charter operations. In this effort, we have had full cooperation from the military services in keeping us fully informed of all pending military charter operations so that our agents can observe these flights. It is interesting to note that perhaps half of the military charter flights are now conducted by scheduled carriers.

The future of the irregular carriers is clouded in two different ways, and the uncertainty adds to the over-all safety problem. In the first place, until present proceedings before the CAB are resolved, there is no assurance that they will have a permanent role in the air transportation picture. Secondly, many of the aircraft used by the irregulars are owned by the military services and loaned to them on short-term leases. Under these circumstances, there is little incentive for irregular operators to make substantial investments to improve their aircraft.

I already have mentioned the new Part 40 of the Civil Air Regulations which covers scheduled operations and became effective the first of this month. There are some sections of Part 40 in which various segments of industry and government do not fully concur. However, the new Part is the product of many months' work, and all concerned were afforded opportunity to express their views in detail. I suggest that we operate in accordance with it for a while and gain experience, rather than anticipate difficulties. When it has had a practical test, we can eliminate or change any portions which are found to require such action.

The CAA constantly is studying problems affecting safety and is engaged in programs to achieve this purpose. I shall briefly summarize some of these which are of direct interest to ALPA members.

### Collision Avoidance

The Society of Automotive Engineers is completing a study of cockpit visibility requirements. Intensive work in this field also has been carried out at the CAA's Technical Development and Evaluation Center in Indianapolis.

At the same time, studies have been going forward on the related problem of aircraft visibility. These have included brightness contrasts of lighted and unlighted aircraft, and possible means of making aircraft more conspicuous in daytime and night by rotating beacons and other devices. Arrangements have been made with an airline to furnish pilots as needed for these tests.

When the studies are completed, the CAA Indianapolis Center will recommend minimum vision angles for the cockpit which may become a basis for revision of the regulations. It is obvious already that something better than DC-3 standards for cockpit visibility is necessary.

### TACAN—VOR/DME

On the general question of TACAN versus VOR/DME, you have undoubtedly seen many items in the trade press, including the information release stating the CAA position. The VOR is practically fully implemented on the ground and to a great extent in the air and many, many millions of dollars have been invested in it. The DME is being implemented at an increasingly rapid rate in the air, and the ground equipment is all installed or on hand for imminent installation. It has taken many years for these components to reach this stage of utility, as it takes many years for any new devices to attain a similar status. We are confident that this system is not due for premature obsolescence. This does not mean that we are disinterested in other techniques which might offer promise of improvement. On the contrary, we are always on the alert for such developments. As you know, we are participating in the ANDB evaluation of both VOR/DME and TACAN from the standpoint of common system requirements.

It would be a mistake to close one's eyes to new techniques. It would be a much greater error to discard an operational system at the appearance of every new device. With the inventiveness and ingenuity of our engineers we could never hold to any one system long enough to put it into use.

### Towers

One of CAA's primary tasks is the control and separation of traffic at airports. The past year has been marked by the discontinuance of CAA-financed tower service at eleven locations where the amount of traffic was deemed insufficient to justify continuing the service at Federal expense.

Last January the Air Traffic Control and Navigation Panel concurred in CAA's new planning standard governing the establishment and discontinuance of tower service. The new standard gives equal weight to air carrier traffic and to itinerant traffic, both military and civil, in determining locations where Federal funds can be justified for control of traffic at airports.

A yearly total of 24,000 air carrier and itinerant operations justifies establishment of Federally financed tower service, and such service will be furnished unless activity falls below 18,000 annual operations. Application of the new standard will result in the CAA financing tower service at five new locations, and in re-establishment of service at four places where it was discontinued on June 30, 1953. Two locations will no longer receive Federal support for operation of towers.

### Radar

The CAA is continuing with the installation of the 44 sets of airport surveillance radar (ASR) which are under manufacture, and five more locations will be placed in operation during fiscal year 1955, adding to the 21 sets now commissioned.

However, in view of the very great cost to install and operate radars, we have carefully reviewed our justification for future programs.

There is now under consideration a revision of our airway planning standard which will result in slowing down the rate at which additional ASRs will be programmed. The new standard, in addition to calling for an ASR at each of the 22 large air transportation hubs, will consider an ASR justified when an approach control tower handles 2,000 or more instrument approaches annually. This has the effect of reducing our program for additional ASRs from 40 to 12.

Precision approach radar (PAR) is in operation at ten locations, and funds are available for 14 more, eight of which will be placed in operation in fiscal year 1955. The proposed revision to our planning standards calls for a PAR at locations having an ASR, and also having 3,000 or more instrument approaches annually. This has the effect of reducing our program for additional PARs from 32 to three.

The proposed changes in measuring the need for ASR and PAR are in line with our general program criteria. These place emphasis on furnishing service to the extent that it is economically feasible, without affecting adversely the safety, efficiency and regularity of operations in interstate commerce.

### L/MF Ranges

The past six months has seen the start of the second phase of our program to replace the low frequency four-course range (L/MF) by the omnirange. The first phase, construction of the ground stations and equipping of aircraft with omnirange receivers, has progressed to the point where we can make a beginning on the second phase, the actual decommissioning of low frequency ranges in the continental U. S.

We have examined the entire 337 L/MF ranges in the system, and as a result 85 ranges were selected for special appraisal as to need. The four regional offices obtained the comments of all users of these 85 ranges, with the result that about 30 of them will be decommissioned within the next one to six months. These ranges are on routes where commissioned omniranges are in operation, or where there is no longer a pressing need for continuing low frequency communications and navigational guidance. Additional decommissionings will be accomplished as soon as additional omniranges are built, or when there is no longer a military requirement for low frequency service.

We are unable to uphold the proposition that the L/MF system should be retained solely to provide navigational guidance below minimum en route altitudes (MEA's) at which it

is safe to fly under instrument flight rules (IFR) conditions. As we see it, the L/MF ranges cannot be justified economically beyond a period of transition to Very High Frequency (VHF) and the retention of enough L/MF facilities to provide scheduled broadcasts of meteorological information. Operationally, the maintenance of two systems of aids, involving two different systems of reporting points in traffic control, will become unfeasible in the not too distant future.

### Temperature Accountability

The present transport category rules incorporate temperature accountability on the take-off field length to 50 feet, and on the accelerate-stop. No correction to the flight path beyond the 50-foot point is now provided for in the rules. Performance studies are under way which may incorporate this additional temperature accountability with other revisions. The CAA-CAB Performance Working Group is currently studying the take-off phase and expects to complete this phase first.

### Automatic Feathering and Automatic Indication of Engine Failure

Automatic feathering has been incorporated in many of our current airplanes based on CAA policy material and equivalent safety to the intent of the Civil Air Regulations. Some malfunctionings and failures have been experienced with automatic feathering systems and corrective measures have been, and are continuing to be taken. The CAA believes that the automatic feathering system provides certain inherent advantages which should not be overlooked. It relieves the pilot of the tremendous wind-milling drag and the associated yaw at the instant of engine failure at a critical moment on take-off since the feathering system will begin to feather the propeller while positive thrust is still available. In the CV-240 Memphis accident the pilot testified that the automatic feathering system definitely assisted him. The pilot has the ability to override the system and to feather manually or to unfeather, and with proper pilot training we believe that the pilot will do the right thing at the right time. There have been several proposals for automatic indication of engine power failure, for which varying degrees of performance credit have been requested. None of these systems has been found to merit the credit requested. However, we are always ready and willing to consider any specific proposal, evaluate its merits and determine what credit might be allowed.

# The ALPA Af

*(Continued from Page 5)*

(4) avoid terrain; (5) reduce operational delays by relaying information to non-radar equipped aircraft.

Management's viewpoint was summarized by Carl Christenson:

(1) They're sold on it and would like it; (2) it should be designed principally for weather avoidance, probing, and intelligence; (3) it should be simple and reliable; (4) it should be lightweight poundwise and costwise; (5) air lines must first find the money to finance its installation—the only real problem blocking it.

### ALPA Safety Structure

The entire morning of the second day of discussions was devoted to ALPA's safety organization.

Heading the discussions in this area were the Central Air Line Safety Chairman Activities Panel and the Regional and Sub-Regional Safety Committee Activities Panel. Composing the first panel were: L. N. Jack, PAA; H. G. Portman, UAL; H. S. Weigel, CAP; and Cecil Darnell, BNF. The latter panel was made up of: L. H. Mouden, BNF; J. D. Smith, CAP; Andrew C. Miller, Reg. Chief Air Carrier Operations Sec., CAA; Craig Timmerman, Reg. ATA representative.

Generally, without going into detail, the following conclusions evidenced themselves:

1. The job of air safety chairman is a big one that is growing even bigger.

2. Results are in direct proportion to the efforts.

3. ALPA — industry - government mutual respect and co-operation is at the highest level it has ever been.

4. Experience has indicated that if a pilot group feels strongly enough about a safety problem and can get unlimited pilot backing, there is no limit to what can be accomplished.

5. Safety should be every pilot's first concern, should take second place to nothing else.

### Meteorology Problems

The meteorology problem confronting the industry and those who must provide it with weather forecasts fitted compactly in this general overall summation: While weather forecasting is becoming increasingly important for the pilot, the supply has not, so to speak, kept up with the demand, but new developments give promise of closing the gap.

"With the advent of long-range flights," W. W. Owen (EAL), Chairman of the Meteorology Panel said, terminal weather is becoming more of a factor than it was a few years ago."

On shorter trips with slower landing planes, pilots could always depend on alternates before, he said. Now, however, they can't. Knowing the weather at their destination is a "must." With jets, it will be even more important.

A. F. Merewether, Supervisor of Meteorology, AA, said while weather requirements for aviation were becoming more exacting, accuracy of forecasting for periods of 12 to 48 hours has improved no more than about 3 per cent.

He blamed the slowness of progress on the nature of the thing: the enormousness and complexity of the atmosphere, hard to study in the laboratory; the fact that increased knowledge of the atmosphere is not necessarily followed by anything like the same progress in weather forecasting; the costliness of investigations in such a broad science.

R. H. Simpson, Aviation Specialist, U. S. Weather Bureau, said that in "the description, the prediction, and the communication of salient features of the weather . . . it has been all but impossible to keep abreast of requirements imposed by technological advancements of aviation."

### Instrumental Developments

They're trying, though, Simpson said, and saw a gleam of hope in instrumental developments.

These instruments, he said, were: The transmissometer and rotating beam ceilometer, under test for the past two years; radar, already installed at some 20 stations in the central and eastern states; the electronic computer, which speeds up complicated mathematical integrations; electronic communications devices, with speeds up to 2,000 words per minute that dispatches the information with important timeliness.

Lt. Colonel Ernest J. Fawbush, Air Weather Service, USAF, said he thought the forecasting of severe thunder storms was improving every year.

"Severe thunderstorms and their related phenomena," he said, "cannot be pinpointed, but dangerous areas can be forecast far enough in advance for the forecasts to be operationally useful. We have issued 2,809 severe

# Safety Forum Highlights

weather forecasts from Tinker Air Force Base and their verification is encouraging."

The forum also heard from Lt. Commander R. W. Westover, USN, on how the Navy tracks down and analyzes tropic cyclones and hurricanes.

### Fire Hazards

The fire threat is still very real, the Forum was told in the panel discussions of fire-protection both in the air and on the ground.

Needed, and needed badly, declared V. H. Brown, panel chairman of ALPA's Fire Hazard Study Committee, is a fire warning device that can be relied on to give positive fire warning but not develop a "cry-wolf" psychology by false warnings.

He pointed out: "We need pilot assistance and support if we are to have better emergency equipment on the aircraft and it will never be any better than we, or someone else, demands."

Pilots, Capt. Brown said, bear the responsibility of carefully monitoring and testing the various fire detection systems new in use. He urged pilots to use the basis of the association's air safety programs—incident reports—to accumulate information for additional refinements of these systems.

Harvey L. Hansberry, Chief Power Plant Branch CAA Technical Development and Evaluation Center, covered some of the main reasons for fire-detection unreliability.

He characterized any false alarm as "most unfortunate," adding: "I believe that with real effort on the part of the development engineers, the aircraft designers, the maintenance personnel, and the flight crews, we can reduce this problem to the point where the pilot will put faith in the detector."

Until this point is reached, however, he advised: Better to heed a false warning many times than ignore a real one once. He summarized:

"1. Detecting systems have been unreliable in the past but are generally becoming more reliable.

2. Every effort should be made to eliminate occurrences of lack of detection or false alarms.

3. Fire in the air does not allow time for study or observation. Even if there was time, little can be seen from outside the power plant.

4. Shut down the engine and shut off the flammable fluid flows as soon

ALPA's President (Right) and the CAA Administrator.

Exec. V. P. MacMurray, Reg. Chairman Mouden, Don Hurst.

Regional V. P. Carl Peternell and J. A. Newton, ICAO.

as possible.

5. A fire burning for a few seconds is easily controlled. A fire burning for a few minutes may be impossible to control.

6. The reliability of the power plant fire detecting system will vary directly with the amount of effort spent to make it reliable."

Capt. Vic Hewes, Delta-C&S, in a report on the crash fire hazard, said the ALPA committee which he heads is convinced that most aircraft fires can be extinguished if reached in time by experienced personnel with adequate, modern, up-to-date equipment.

Why aren't they, then? Too little, too late in airport fire protection, according to Capt. Hewes.

Jerome Lederer, of the Flight Safety Foundation, concurred with the idea that airport fire protection, as a whole, was inadequate. He said only a small percentage of civilian airports have adequate fire fighting equipment and organization.

### Problem Largely Economic

The situation was largely economic, money would remedy it, he said, but: "Is the public willing to pay about 10 per cent more for its air transportation to obtain this extra safety?"

"The first avenue to improve fire fighting organizations should be to make their job less formidable than it is now," he declared.

To accomplish this he suggested:

1. Design the cockpit and cabin to give occupants a maximum chance of survival without injury in survivable type accidents.

2. Design exits so that they will not jam, can be opened from the outside, are easy to see by day or night, have locking mechanisms that are simple and natural to use, and are large enough not to require acrobatics to use.

3. Design to reduce the chances of fire following impact and/or provide distance between the possible fire and the cabin. This is of the utmost importance to give more time for the occupants to escape and for the crash crew to get to the crash site.

### Jets Draw Interest

While tackling the problems of the present the Air Safety Forum didn't ignore those of the future. As a matter of fact, a spirited half-day, indicative of the look-ahead concept of air safety, was devoted to jet powered airplanes and their operating problems.

From a cockpit standpoint, Capt. Fred Illston (AA) reported pilots will find controls simplified but other problems complicated and multiplied.

He said it is important that we devise equipment and procedures to minimize these problems.

Pilots will find themselve in a new world of working conditions, too: "Today we fly 13.8 round trips per month between New York and Chicago. Tomorrow at 500 MPH we will be able to fly 25 round trips in an 85-hour month."

M. G. Beard, chief engineer for American Air Lines, cited some of the economic aspects of the jet transports: high initial cost (several times the DC-6 or Constellations); high depreciation; but interestingly enough, because of increased speeds, a per-mile operating cost closely comparable to that of present transports.

"Jet transports under consideration," he said, "have best economy at ranges above 1,000 miles. The full pay load ranges of these models is between 3,000 and 3,500 miles."

He listed as a factor of public acceptance: that the industry-manufacturers and air lines—are sure that the airplanes and jet engines are operationally safe and mechanically reliable.

**ON THE COVER**

*Some of the speakers at the Forum Banquet: Upper left, C. N. Sayen, President, ALPA; right, F. B. Lee, CAA Administrator; lower left, Jerry Lederer, Flight Safety Foundation; right, J. D. Smith, Regional Safety Chairman and M. C.*

### Will Rely on Pilots

The jet age will rely heavily on the pilots, commented Ed Bracher, Supervisor of Boeing Production Flight test, in commenting on jet flight operation experience. He declared: "Past operations of commercial aviation have been safe because pilots flying the aircraft have been experienced and able. Operation of jet transports will demand, as previous commercial transports have, that the flight personnel be experienced and able. Older pilots will have no more difficulty in flying a jet than the young man of twenty-five; in fact, the older, able, and experienced pilot will have an easier transition to the jets. He will find that the transition to a jet is no more complex or difficult than his previous transition from a DC-3 to a DC-4 or a Constellation. The transition period will be devoted to becoming familiar with the mode of operation, new controls, etc.—the airplane still flies like any other airplane, and still has the same basic controls systems."

On jet instrumentation, Melvin N. Gough, National Advisory Committee for Aeronautics, declared:

"The flight of the jet transport of the future entails higher altitudes, speeds, fuel consumptions, power output, and all around closer planning. Present instrumentation will require greater ranges, reading accuracy, and more direct interpretation. It seems reasonable to predict that flight can be accomplished with fewer engine controls and primary instruments — all toward the flight operations safety objective of making an accident purely an accident."

### Jet Flying Tests Skills

Douglas Fraser, Technical Ass't to Civil Air Attache, British Embassy, said the jet transport is much more exacting than its piston-engine cousin. "The jet," he said, "is less flexible in choice of altitude or cruising speed than the piston-engined machine, if it is to be operated efficiently. The inflexibility manifests itself in a demand for greater certainty in navigation, in air traffic handling and in knowledge of airport weather conditions."

George W. Haldeman, Special Ass't to Director CAA Office of Aviation, expressed the opinion that jet development is a teamwork proposition:

"It is imperative that the CAA work very closely with the manufacturers, operators, pilots, and flight engineers in the early stages of development of any new cargo and transport aircraft, because it appears that these aircraft will be of much higher weight, higher power—therefore, the cost will be greater. To make changes to an airplane after it has once been designed is extremely costly. Therefore, an actual saving can be shown by Government and industry alike, by having as complete and thorough understanding as possible of the civil requirements before a new model aircraft is constructed. That, then, is basically the reason and justification for the CAA to expand the man-hours which we have and are now putting into research in order to develop adequate and practical commercial requirements for jet transports."

Delegates present at the Forum were:

**Central Airline Safety Chairmen:** Marshall R. Smith, WCA; Cecil Darnell*, BNF; Allen P. Shelly, CAL; George W. Stobel, PNA; Robert W.

Vanek, HAL (Proxy); Henry Weigel, CAP; Carlton Smith, RAL; S. P. Gilley, PAI; L. M. De la Rosa, Carib.; George Martin, BAL; Jeff Hanan, SWA (Proxy); Eugene Garges, Jr., COL; Delbert Booth, CEN (Proxy); Sterling Love, WAL; James Cowart, TTA; Tom Mikita, LCA (Proxy); R. O. Walford, MOH; W. H. Lang, EAL; Edward Taaffe, NAL; B. C. Dickerson, DCS; L. N. Jack*, PAA; W. R. Waters, NEA (Proxy); P. W. Waltz, OZA (Proxy); D. N. Kimmel, AAA; R. B. Parkinson, NOR; Trip Brown, SOU; Don Leonard, NWA; C. H. Daudt, AA; H. G. Portman, Jr.*, UAL; H. B. Hall, PAL; Edwin Boyce, TWA; W. Baldwin, FAL (Proxy); H. D. Caldwell, Panagra.

**Regional, Sub-Regional, and Special Committee Chairmen:** Jess Henslee, TWA; Paul Soderlind, NWA; E. H. Croft, BNF; L. F. Abel, CAP; George Henderson*, UAL; Don L. Hurst, BNF; Norman Galbraith, AAL; Jerome E. Wood, EAL; A. C. Ball, UAL; A. L. Headstrom, TWA; L. Homer Mouden*, BNF; V. H. Brown*, AAL; J. D. Smith*, CAP; Walter Jensen*, AAL; George Drew, TWA; Lawrence Shapiro*, UAL; M. A. Ferguson, FAL; W. W. Owen*, EAL; H. P. Rosasco, EAL; D. D. Clifford, EAL; Carl A. Peternell, UAL; Dean L. Phillips, TWA; Fred Illston*, AAL; Robert A. Stone, UAL.

**Industry Guests:** John M. Chamberlain, CAB; Capt. Ben B. Lipsner, Secy. Chicago Aero Commission; Melvin N. Gough*, NACA; Otto E. Kirchner, American Airlines; Wayne Jordan, CAA; Andrew C. Miller*, CAA; Ed Franklin, CAA; W. T. Dickinson, Douglas Aircraft Company; Douglas Fraser*, British Embassy; J. F. Woodall, Consolidated Vultee Corp.; R. Dixon Speas, Consultant; Norval Burch, National Safety Council; Howard Warzyn, National Safety Council; E. J. Fawbush*, USAF, Tinker AFB; R. W. Westover*, USN; W. P. Person, Flight Safety Foundation; Sam Saint*, Air Transport Association; C. M. Harper, CALPA; R. Loebelson, American Aviation; O. L. Wilkinson, Hydro-Aire, Inc.; E. C. Sutton, Aero Associates, Inc.; Wayne Thomis, Chicago Tribune; Jerome Lederer*, Flight Safety Foundation; P. Luczak, Navy; R. H. Simpson*, U. S. Weather Bureau; Frank Todd, United Air Lines; H. Harrington, Jr., Management Consultant; Ken Burroughs, Aero University; R. Shea, Aviation Week; A. F. Merewether*, American Airlines; A. S. Koch, CAA; George W. Haldeman, CAA; Ferris J. Howland, CAA; J. A. Newton, ICAO; William F. Chana, Consolidated Vultee Corp.; George E. Bottjer, Raytheon Mfg. Corporation; William H. Weeks, CAA; L. I. O'Kelly*, University of Illinois; George W. Leighton, Air Carrier Flight Engrs. Ass'n; Charles V. Schug, Pres. ACFEA; Wayne Hendershot*, CAA; Fred C. Glaes, CAA; Major Norman Lawrence, USAF, Norton AFB; A. Elliott Merrill, Boeing Airplane Co.; Ed Bracher*, Boeing Airplane Co.; E. K. Knox, Cresap, McCormick & Pazet; Harvey L. Hansberry*, CAA; Daniel E. Barrow*, CAA; Carl Christenson*, United Air Lines; M. G. Beard*, American Airlines.

*Panel Member

### A Summing Up

In conclusion, it might be well to take a look at what the Air Safety Forum accomplished from an overall standpoint:

1. It pinpointed some of the most significant operational problems of the present and pointed up in advance some of those that can be anticipated for the future.

2. Cemented more firmly ALPA-industry-Government cooperation by permitting a free exchange of opinion, problems, and ideas without the confining boundaries of official commitments.

3. Added significantly to Air Safety awareness without which recognition there is no real foundation for aviation progress.

4. Enabled pilot safety representatives from each air line to review some of the projects in progress and exchange views on mutual problems.

## Award UAL Flight Manager Retired Membership Card

*Capt. Gillespie* *W. D. Williams*

W. D. Williams, Flight Manager, UAL San Francisco, receives his "ALPA Retired Membership Card" upon his retirement.

The card was presented before the UAL MEC on March 24 in San Francisco. Captain J. H. Gillespie, UAL 1953 MEC Chairman, is at left making the presentation.

Williams gave an entire career to aviation, first as a pilot then as an executive. A charter member of ALPA, Williams retired in a paid-up, active status. During his career, Williams served both his company and the Association well without in anyway compromising his loyalty to either.

# A Passenger View Of the Line Pilot

## The Guy in Back Looks at the Guy Up Front and Wonders: "How Does He Do It?"

**The N. Y. Times**

*Topics of the Times, May 20, 1954*

Sometimes at night, during a lull in Manhattan's street sounds, the throbbing of an airliner overhead can be heard here below. High in the darkness someone's steady hands are guiding a huge ship on its course, up and away from this island's fairyland of sparkling lights. This being a season of uncertain weather, bringing with it turbulence in the air and sudden showers, it seems appropriate to say a word for those pilots—birdmen, they used to call them—who fly today's big airships from city to city, continent to continent, on remarkably dependable schedules. For it is no small thing even in good weather to be the captain of a modern airliner with fifty or sixty passengers aboard, flying eight, ten or twenty thousand feet from the ground. When the weather is not so good the job of a flight captain becomes—at least so it seems to the non-aeronautical passenger—pretty complicated.

### Greetings from the Pilot

One leaves the airport loading dock before sunset, bumping along the ground on the way to the take-off point, seat belt fastened. The pilots rev up the engines and the airplane begins to roll along the ground faster and faster. In a moment it no longer is a lumbering, clumsy thing, but a trim flying machine with its wheels tucked into its stomach, climbing swiftly into the soft evening sky. There is a click from the public address system and then the voice of the captain. "Good evening, everyone," says the voice casually. "We're going to fly at an altitude of 12,000 feet. The weather ahead looks pretty good. There's some rain near Chicago. In an hour or so it may be a little choppy. We'll try to find the most comfortable altitude. We expect to arrive on schedule—maybe a little earlier."

### Dinner at 12,000 Feet

Outside it's clear. The air is smooth —so smooth that when the stewardess comes with dinner the level of coffee in the cup scarcely changes, so smooth that one forgets how strange it is, after all, to be eating dinner 12,000 feet in the air, speeding along at better than 300 miles per hour. There is a buzz of voices, a small clatter of silver, the steady drone of the engines. As darkness falls reading lights go on on either side of the ship. One sinks back in the seat and dozes off.

### New Sound from the Engines

One awakens to the captain's voice: ". . . getting a little choppy. We're flying through some clouds, with occasional rain. Please fasten your seat belts," he adds, still casually. If one is a seasoned traveler possibly he has kept his belt loosely fastened anyway. A glance outside reveals clouds, through holes in which can be seen lights of some city far below. One dozes off again, awakening to a new sound from the engines. The airplane is going down. That casual, chatty voice again: "It's still a little choppy and we're going to find a more comfortable altitude. We're cutting about forty miles from our air speed, so we may be a little late . . ."

### Clouds—Plus Lightning

More clouds—and one is unpleasantly aware that some lightning is flickering through them. The air is a bit more "choppy," and the captain pulls the airplane up a thousand feet or so. No improvement. The ground is invisible; the wingtips are just barely visible until lightning outlines them with startling clarity. Conversation in the plane ebbs and is replaced by a glum silence. "We're now approaching our destination," says the casual voice as the plane makes a sudden dip and the lightning flashes. "We'll have to wait our turn to land, but the clouds are opening up a little and I don't think we'll have to wait very long." One peers from the window and sees nothing at all. The airplane drones around, obviously in circles, and one hopes that the captain knows where he is. He does. The plane noses down, its landing lights turned on, and all at once the glow of the city below appears through cloud wisps. The aircraft lands smoothly on the rainswept field, and again that casual voice: "Sorry we're late folks. Hope you'll be with us again." Looking up at the dark, rain-filled clouds one is glad to be there at all, and on leaving one turns toward the nose of the plane, hoping at least to offer the captain a friendly wave of the hand. A fine fellow the captain—and one wonders how he does it.

## Jet Transport Nears Completion

The new Boeing prototype jet transport nears completion. The big, four-jet transport will be used as a prototype model for demonstration to the military services and commercial air lines. It is 128 feet long, tip to tip wing measurement is 130 feet, cruising speed is in the 550 mile per hour class, its weight is 190,000 pounds.

## THE TORNADO UNMASKED

Not until three unknown Air Force meteorology officers in Oklahoma began to realize the fruition of many years of research was any worthwhile progress made in the forecasting of the tornado, erstwhile scourge of the Southwest but now gradually becoming the number one weather curse of two-thirds of America.

Recognized for over a century as the vernal problem child of the Great Plains and the Mississippi Valley, the dreaded twister for a long time was thought to be so freakish as to defy diagnosis and no serious attempts were made to study anything of it except the macabre trail it left across the stricken countryside. Only in the past 15 years has much been learned of the conditions that lead to the formation of the roaring funnel cloud which leaves its characteristic picture indelibly impressed upon the memory of the man close enough to see it and lucky enough—or with enough foresight—to survive it.

It was the brilliant logic and painstaking research of Lt. Col. E. J. Fawbush, Major R. C. Miller and Capt. L. G. Starrett of the Air Force Weather Service at Tinker Field in Oklahoma City which was rewarded with such success that today the U. S. Weather Bureau, using their forecasting methods, is predicting with uncanny accuracy when and where the terrifying twisters will strike. The Bureau's batting average is much too good to be luck. Its success is a fitting tribute to the trio of harried but dogged officers who knew there had to be a pattern of design for the tornado, a set of circumstances for its conception, some of which were obviously being overlooked by curious meteorologists exploring the subject. In 1940 they set out to find how tornadoes formed.

The story of their eventual success has been outlined in a new book, a brilliant treatise, "TORNADOES OF THE UNITED STATES," University of Oklahoma Press, 1953. Its author is an eminent authority, Snowden D. Flora, who spent nearly half a century in the service of the Weather Bureau, most of it in Kansas. His authoritative work is a masterpiece and an invaluable addition to the library of the professional pilot, the journeyman whose work is likely to bring him into contact with the dreaded tornado more often than anyone else.

Flora's book is replete with records of many years. There are graphs, descriptions of the most destructive storms, eye-witness reports from that charmed handful of esoterics who have had the dubious privilege of gazing up inside the vortex cloud. (Their awe-inspiring description of the strange lightning inside the funnel is like a view of another world.) Flora's collection of tornado photos is considered the best extant and he has reproduced many of them for his reader. His work covers the awesome details of the dreadful devastation wrought by this inverted aerial volcano, which inhales with the same fury its geological counterpart exhibits in reverse when it belches forth a lethal load of lava.

From the pictures and text of Flora's book it is not hard to discern that the most dangerous and devastating type of tornado is not the long, dangling, spectacular carrot-shaped cloud, usually gray and silhouetted against a background of brighter sky—although this type is vicious. It is the short, stubby and wide, intensely dark vortex that hugs the ground from an even blacker battery of low, angry clouds that is the colossal destroyer. The embrace of this one is the kiss of death. This is the type least likely to be seen by the aviator but the easiest one to ride into from above if he is indiscreet or unlucky enough to be flying on instruments in such a troubled area. This type may expand to a half mile in width and its whirling winds —reaching perhaps 400 miles per hour—will deal destruction to everything in its path.

Flora's main contribution to the field of aviation weather is his detailed coverage of the Fawbush-Miller-Starrett method of forecasting. He has reduced their system to the elementals of the six basic points, *every one of which must exist simultaneously* for a tornado to form. Never before has the meteorologist had at his finger tips the information so vital and necessary to make an intelligent and accurate forecast of Nature's wrathful misdeeds. But thanks to the Tinker Field team, the missing links have been supplied. No longer is the pilot entirely dependent upon his own intuition—and luck—when he sets forth on an aerial jaunt that will take him through the warm air sector of a low pressure system, the incubator of the twister. He now has science on his side.

The six basic conditions—all required at once to spawn a tornado—are explained by Flora but they are rather technical and two of the six points are not readily available to the pilot, so the list is omitted here. But the watchdog eye of the Weather Bureau is on guard 24 hours a day, warily surveying suspicious areas, ready to recognize the telltale danger signs at the outset so they can transmit the warning to laymen and airmen alike in the form of the Severe Weather Bulletin, the most commendable advance in aviation meteorology in recent years.

Curiously enough, America, which leads the world in production of so many things, is away out in front in the production of tornadoes. As Flora so eloquently points out, the topography of the United States and the location of the Gulf of Mexico make for a perfect spawning ground for the twister, satisfying easier and more often the six basic requirements taught by Fawbush, Miller and Starrett. Nowhere else in the world do more ideal conditions exist than in our Central States, for it is on this frontal battleground that the cold, unstable, dry air from the Northwest meets the warm, moisture-laden winds from the Gulf.

Perilous as tornadoes are to aviation, they have caused surprisingly few confirmed accidents for the airlines, probably because experienced pilots avoided suspicion areas and at other times during instrument flight were favored with a certain amount of luck. It is comforting to know today that with the aforementioned specialists on the job, assisted by the findings of other scientists, such as Morris Tepper with his "pressure jump theory," H. L. Jones with his oscilloscope, and more installations identical to the new 15-station radar network recently commissioned in Texas and Louisiana, the ability to keep abreast of the alarming rise in the incidence of Nature's worst storms should prove easier.

In the meantime, as the height of the tornado season approaches, the smart pilot will read and respect the Severe Weather Bulletins. They are posted prominently and are on the briefing board to fill the void that earlier and less fortunate birdmen had to compensate for by savvy and guesswork. The alert pilot will avoid areas forecast to become hotbeds of tornado activity and if he does go he will not fly on instruments in the unsettled area, choosing instead to remain VFR at all times or to fly on top.

He will go by air—not by error.

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